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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/048,104	06/17/2002	Hans-Rolf Dubal	514453-3912	1522

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EXAMINER

WANG, GEORGE Y

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/048,104	DUBAL ET AL.	
	Examiner	Art Unit	
	George Y. Wang	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-19 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 12 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 12-18, drawn to a liquid crystal display device.

Group II, claim(s) 19, drawn to a chiral smectic liquid crystal mixture.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I and II are related as combination and subcombination where the combination as claimed does not require the particulars of the subcombination as claimed for patentability.

2. During a telephone conversation with Mark Russell on September 4, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 12-18. Affirmation of this election must be made by applicant in replying to this Office action. Claim 19 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to Claim 12, the claim recites the limitation "Tc" but does not describe what that represents. Furthermore, there is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

As per Claim 16, the claim recites the limitations "Tc" and "T_{N1}" but does not describe what they represent. Furthermore, there is insufficient antecedent basis for the limitations in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori (U.S. Patent No. 5,629,788, from hereinafter "Mori") in view of Takatori (U.S. Patent No. 6,351,301) and Applicant's Admission of Prior Art (AAPA).

8. As to claim 12, Mori discloses a liquid crystal display device (title) comprising a chiral smectic liquid crystal mixture in alignment, characterized in that the liquid crystal mixture has the phase sequence I-N-C and the angle ρ between the rubbing direction and the monostable position is at least 1° (table 1).

However, the reference fails to specifically disclose a mixture in monostable alignment.

Takatori discloses a liquid crystal display device comprising a chiral smectic liquid crystal mixture in monostable alignment (col. 3, lines 37-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a chiral smectic liquid crystal mixture in monostable alignment since one would be motivated to have a correspondence in which a brightness is changed only but one polarity of voltage (col. 3, lines 44-46). This not only increases reliability and control, but also permits continuous display, such as grayscale display (col. 3, lines 31-32).

9. Regarding claims 13-14, Mori discloses the liquid crystal display device as recited above having a tilt angle at 25 °C is between 19° and 39° and a spontaneous polarization of less than 150 nC/cm² (table 1).

10. As per claim 15, Mori discloses the liquid crystal display device as recited above, however, the reference fails to specifically disclose that the device is an active matrix or passive matrix display.

AAPA discloses a nonstructured substrate combined with an active matrix substrate (pg. 1, lines 20-23).

It would have been obvious to one of ordinary skill the art at the time the invention was made to have included the device in an active matrix display not only

because it will common and well known in the art to do so, but since one would be motivated to create non-linear elements, such as diodes, metal insulator metal, and TFTs, which are advantageously produced in such a combination (pg. 1, lines 20-28).

11. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori, Takatori, and AAPA in view of Fuss et al. (U.S. Patent No. 5,547,605, from hereinafter "Fuss").

Regarding claims 16-18, Mori discloses the liquid crystal display device as recited above, however, the reference fails to specifically disclose the pitch of the cholesteric helix greater than 2 μm and sulfur-containing heterocyclic compounds, which derive from thiophene and are at least 20% by weight.

Fuss discloses a liquid crystal mixture for I-N-C phase sequence (col. 1, line 35) having where pitch of the cholesteric helix greater than 2 μm (col. 1, lines 37-38) and containing sulfur-containing heterocyclic compounds (col. 2, line 55 – col. 4, line 10), which derive from thiophene (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the aforementioned specifics since one would be motivated to achieve optimum contrast and alignment (col. 1, lines 28-33). The introduction of thermal, chemical, and photochemical stability allows quick and shortened response time (col. 2, lines 7-15), useful in wide viewing angles and reliable switching (col. 1, lines 5-19).

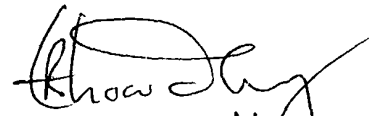
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gw
September 27, 2003


T. Chowdhury
Primary Examiner
Tech. Center 2800